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Declarations under Rule 4.17:

— as to applicant's entitlement to apply for and be granted
a patent (Rule 4.17(ii)) for the following designations AE,
AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ,
CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE,
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BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE,
BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,
IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent
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— as to the applicant's entitlement to claim the priority of the
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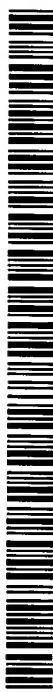
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For two-letter codes and other abbreviations, refer to the "Guid-
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ning of each regular issue of the PCT Gazette.

(54) Title: MOLECULAR DETECTION SYSTEMS UTILIZING REITERATIVE OLIGONUCLEOTIDE SYNTHESIS

(57) Abstract: The present invention provides methods for detecting the presence of a target molecule by the use of nucleotide analogs containing moieties that enable detection. Such analogs may be incorporated into nucleic acids. In one embodiment, nucleotide analogs are used in a process generating multiple detectable oligonucleotides through reiterative enzymatic oligonucleotide synthesis events on a defined polynucleotide sequence. The methods generally comprise using a nucleoside, a mononucleotide, an oligonucleotide, or a polynucleotide, or analog thereof, to initiate synthesis of an oligonucleotide product that is substantially complementary to a target site on the defined polynucleotide sequence; optionally using nucleotides or nucleotide analogs as oligonucleotide chain elongators or chain terminators to terminate the polymerization reaction; and detecting multiple oligonucleotide products that have been synthesized by the polymerase.



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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/13031

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : C07H 21/00, 21/02, 21/04
US CL : 536/23.1, 25.3, 25.32, 26.6

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 536/23.1, 25.3, 25.32, 26.6

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	MEYER et al. Synthesis and Characterization of a New 5-Thiol-Protected Deoxyuridine Phosphoramidite for Site-Specific Modification of DNA Bioconjugate Chem. 1996, Vol 7. No. 4, pages 401-412, see entire document.	1-27
Y	US 5,912,340 A (KUTYAVIN et al) 15 June 1999, see entire document.	1-27

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

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"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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"P" document published prior to the international filing date but later than the priority date claimed	

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INTERNATIONAL SEARCH REPORT

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Continuation of B. FIELDS SEARCHED Item 3:
STN
search term: thio, modified oligonucleotide base, label